

tainty, are of little or no value. They are examples of the unfortunate practice of attaching generic and specific labels to specimens with insufficient character to warrant such distinction, with the ultimate result of bringing paleobotany into disrepute. These two specimens should be and are hereby rejected as representing identifiable species of *Lygodium*. This leaves *L. pumilum* as the only known authentic American Cretaceous species. Its diminutiveness clearly separates it from the Tertiary species.

One authentic European species, *Lygodium cretaceum* Debey and Ettingshausen (1859, p. 198, pl. 2, figs. 18-21; pl. 3, fig. 28), said to be from the Senonian of Prussia, is represented by fertile and sterile foliage. The sporangia of this species occur on the margins of leafy pinnules, a habit shown by a number of living species.

Lygodium pumilum resembles no living species very closely, but apparently belongs in the group that includes *L. palmatum*, the climbing fern of the eastern United States. The latter, rather rare now because it was indiscriminately collected for decorative purposes before receiving legal protection, frequents moist thickets and open woods in lowlands but may sometimes be found at elevations exceeding 2,000 feet. Most of the 40 living species of *Lygodium* now listed are tropical or subtropical. They have a lithe,

willowy attractiveness, and their dissected foliage displays great variation, which makes accurate identification of the species extremely difficult. The climbing portion above ground corresponds to the frond in nonclimbing ferns, and the foliage itself, both fertile and sterile, constitutes subdivisions of the frond, called pinnules by some and pinnae by others.

Considering that palms are also found in the Mesaverde formation, we may conjecture that *Lygodium pumilum* was a member of a floral assemblage adapted to a warmer, moister, less rigorous climate than that which prevails in Wyoming today.

I am grateful to Dr. William R. Maxon, of the National Museum, for the privilege of consultation with him during the preparation of this paper.

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ORNITHOLOGY.—*Description of a third form of curassow of the genus Pauxi*.¹

ALEXANDER WETMORE, U. S. National Museum, and W. H. PHELPS, Caracas, Venezuela.

The genus *Pauxi* has been one of the least known of the interesting group of curassows in spite of the fact that the typical form was named by Linnaeus in 1766. The earliest specimens to come to the attention of students of birds apparently were obtained from Indians, and were attributed erroneously to Mexico, the Island of Curaçao, Cayenne, the upper Orinoco, and various other localities where the species is not known to exist. In 1870 Sclater and Salvin recorded *Pauxi* from near Caracas, and it was determined in the years that followed that these birds inhabited the forested

mountain areas of northern Venezuela from near Caracas west to the vicinity of Mérida. Comparatively few specimens have been received in museums in the period since the latter part of the sixteenth century when Aldrovandus wrote of it under the name of the *Gallina indica alia*, until recently when its haunts have become better known. Unexpectedly, two were obtained recently by M. A. Carriker, Jr., for the Academy of Natural Sciences of Philadelphia, during work in Bolivia, in the hills above Bolívar, at 2,500 feet elevation near Palmar, in the Yungas de Cochabamba. These proved to have the casque rounded and conical instead of swollen and were described by Bond

¹ Received March 25, 1943.

and de Schauensee as *Pauxi unicornis*.²

From February to March, 1940, W. H. Phelps put an expedition in the field in the eastern slopes of the Sierra de Perijá, west of Machiques, in northwestern Venezuela. One of the collectors of the party purchased from Indians of the Manastara tribe living

ported a *pauji* in the adjacent forests, but none could be found during the course of the expedition. In 1942 a second necklace was received in Caracas as a gift with the assurance that it came from the Indians of the Machiques region. This second necklace was composed of beads, the bills, chest

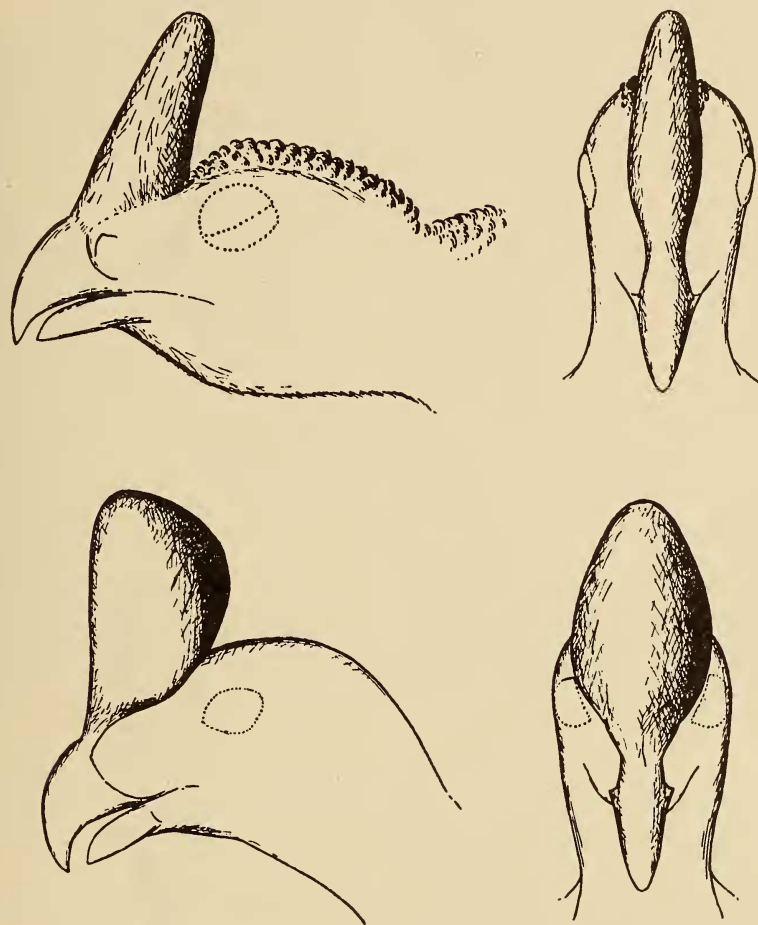


Fig. 1.—Head of *Pauxi p. unicornis* Bond and de Schauensee (above) and of *P. p. pauxi* (Linnaeus) one-half natural size, reproduced to scale, through the courtesy of J. S. Bond and R. M. de Schauensee.

at La Sabana a necklace made of beads, with decorations in the form of three head scalps of *Pauxi* composed of the upper half of the bill, the casque, and the skin of the crown down to the eyes. The Indians re-

² *Pauxi unicornis* Bond and de Schauensee, *Notulae Naturae Acad. Nat. Sci. Philadelphia*, no. 29: 1. Oct. 24, 1939.

feathers, and humeri of two species of toucans, and six of the *Pauxi* scalps.

In 1941 M. A. Carriker, Jr., collecting for the U. S. National Museum, following work with A. Wetmore through the Guajira, continued into the Sierra Negra at the northern end of the Perijá range on the Colombian side of the mountains. In this

work he secured five fine skins of *Pauxi*, a male at 1,800 feet near El Bosque back of Carriapia on June 21, a male at 1,200 to 1,500 feet near Tierra Nueva, July 21, and two adult females and one juvenile between 4,000 and 4,500 feet near Monte Elias in the same general region on August 9 and 11.

In Caracas, on comparing the scalps from the necklaces with skins from farther east in Venezuela, it was evident at once that an unknown form was concerned. After comparison there, through the kindness of Dr. William Beebe, six of the scalps, showing the variations in form, were brought to the American Museum of Natural History, where E. Thomas Gilliard made further studies with material available there and in Philadelphia, assembling much valuable information. When the series of skins in the National Museum came to his attention it seemed desirable to select one of those as type rather than one of the fragmentary heads as was first intended. As Gilliard was under necessity of undertaking other work that has taken him out of the United States, we are completing the study with the aid of additional material.

The investigation has been much assisted by the kindness of Miss Jocelyn Crane, of the Department of Tropical Research, New York Zoological Society, in photographing in Caracas the nine heads obtained from the Indian necklaces.

The hitherto unknown form may be known as—

***Pauxi pauxi gilliardi*, n. subsp.**

Characters.—Similar to *Pauxi pauxi pauxi* (Linnaeus)³ but with the frontal casque or helmet smaller, less swollen (Fig. 2); bill smaller.

Description.—Type, U.S.N.M. 368540, from 1,200 to 1,500 feet elevation near Tierra Nueva, at the northern end of the Serranía de Valledupar, or Sierra Negra, slightly south of east of Fonseca, Departamento de Magdalena, Colombia. Abdomen, extreme lower breast, under tail-coverts, and tip of tail white; rest of plumage black; feathers of head and upper neck, short, thick and soft to the touch, those surrounding the eye being very small; foreneck,

breast, and sides with a greenish sheen, with each feather bordered distally with clear black, producing a dull, squamated appearance that is most prominent on the upper breast and foreneck; exposed feathers of dorsal surface, including wings and tail, also with a dull greenish cast with the wing coverts, lower hind neck, upper back, and longer upper tail-coverts margined narrowly with deep black to produce somewhat indistinct squamations; lower back and rump dull black. Bill dull red; casque blackish brown, with a wash of dull silvery gray on distal third; tarsi and toes dull reddish brown; claws blackish brown (from dried skin).



Fig. 2.—Head of *Pauxi p. gilliardi*, one-half natural size.

Measurements.—Males, 2 specimens, wing 354, 370, tail 305, 317, culmen from base of casque 32.1, 33.7, tarsus 110.3–112.1, length of casque (casque deformed in one bird) 58.3, width of casque 24.1, depth of casque 24.5, greatest circumference of casque 76 mm.

Females, 2 specimens, wing 336, 352, tail 290, 292, culmen from base of casque 30.4, 30.7,

³ *Craz pauxi* Linnaeus, *Systema naturae*, ed. 12, 1: 270. 1766.

tarsus 102.9, 103, length of casque 53.5, 57.8, width of casque 23.9, 27, depth of casque 24, 27.1, greatest circumference of casque 76, 83 mm.

Type, male, wing 354, tail 305, culmen from casque 32.1, tarsus 110.3, length of casque 58.3, width of casque 24.1, depth of casque 24.5, greatest circumference of casque 76 mm.

Range.—Known from the mountain forests of the northern part of the Sierra de Perijá from 1,200 to at least 4,500 feet elevation from the region east of Fonseca, Magdalena, Colombia, around to the headwaters of the Río Negro above Machiques, Zulía, Venezuela.

Remarks.—It is easily apparent that the differences in the three forms of the genus *Pauxi* now known are found mainly in the casque, which varies from the cylindrical, somewhat tapering form seen in the two known specimens of *P. unicornis* to the considerably swollen, figlike shape of typical *pauxi*, with *gilliardi* coming between (Figs. 1 and 2). The feathers of the center of the crown, nape, and hind neck in *unicornis* are stiffer and are glossy, instead of soft and velvety; but tendency toward this condition is found also in *pauxi* and *gilliardi*.

Comparative measurements (in mm.) of the casque in all available material follow, those registered for *gilliardi* including the nine heads from Indian necklaces in the Phelps collection:

	11 <i>pauxi</i>	13 <i>gilliardi</i>	2 <i>unicornis</i>
Culmen, from base of casque	32-39	29-36	32-35
Greatest width of casque	28-40	19-27	20
Greatest depth of casque	30.5-38	21-27.1	23
Greatest circumference of casque	93-117	63-85	66-75

The three races will stand therefore as follows:

PAUXI PAUXI PAUXI (Linnaeus)

Mountain forests of northwestern Venezuela from near Caracas, through the Cumbre de Valencia to the Mérida region.

PAUXI PAUXI GILLIARDI Phelps and Wetmore

Forests of the Sierra de Perijá from the western slope in Colombia east of Fonseca, Magdalena, and the Montes de Oca, Guajira, Colombia, around to the head-

waters of the Río Negro above Machiques in Venezuela, probably extending much farther south.

PAUXI PAUXI UNICORNIS Bond and de Schauensee

Known from two specimens from near Palmar, Yungas de Cochabamba, Bolivia.

The form of the casque varies somewhat with age. Carriker secured a young female of *gilliardi* at Monte Elias, Magdalena, Colombia, on August 11, 1941, that apparently is not quite half grown. It already has the plumage of the adult, except that a few bright brown feathers of the young plumage are still found in the crown, some of the wing coverts and back feathers are tipped, or occasionally mottled lightly with bright brown and buff, the secondaries and tertials are mottled somewhat with bright brown and the feathers of the sides, lower breast, and legs are tipped with whitish to buffy brown. The casque in this bird is merely a rounded knob above the base of the culmen, rising about 7 mm from a base that is approximately 15 mm long and 8 mm wide. Gilliard's notes describe an immature *pauxi* in the American Museum of Natural History (no. 471586) with the casque about two-thirds developed which has the greatest circumference about 80 mm. One or two of the heads of *gilliardi* in the Phelps collection may be younger than the others as indicated by the smaller casque. The most southern race, *unicornis*, has the casque more uniformly cylindrical throughout. The two northern forms are marked by a posterior swelling that reaches its maximum development in typical *pauxi*.

Linnaeus⁴ based the description of his *Crax pauxi* on the accounts of Aldrovandus, Willughby, Hernandez, Edwards, Brisson, and other early authors, and from these sources indicated that the bird came from "Mexico." The occurrence of the species has been in much confusion with various erroneous localities included. From present knowledge it appears probable that the few examples seen by the early writers came from Venezuela, since that is the section of the known range ordinarily accessible to the

⁴ *Systema naturae*, ed. 12, 1: 270. 1766.

early travelers. We, therefore, designate the type locality as near Caracas, Venezuela, since in early days forests suitable for *Pauxi* were found near the city.

As regards the altitudinal distribution of these birds it is erroneous to limit them to the Tropical Zone. Two specimens of *Pauxi* in the Phelps collection were obtained in the Cumbre de Valencia, Carabobo at 1,440 meters (4,725 feet), and at Cubiro, Lara, at 1,900 meters (about 6,200 feet). These are in the lower edge of the Subtropical Zone.

We have pleasure in naming the new form for E. Thomas Gilliard, in recognition of his work on the material on which it is based.

Specimens examined.—*Pauxi p. pauxi*. Venezuela: (American Museum of Natural History) 3 ♂, 7 sex ?, Montañas del Capás, Mérida region (Briceño); 1 ♂, Limones, Río Limones, Mérida region; 1 sex?, zoo specimen; 1 sex?, "northwest Venezuela"

(mounted). (Academy of Natural Sciences of Philadelphia) 3 sex?, zoo specimens; 1 sex?, "northern South America." (Phelps collection, Caracas) 1 ♂, Cumbre de Valencia, Carabobo, at 1,440 meters; 1 ♀, Cubiro, Lara, 1,900 meters.

Pauxi p. gilliardi. Colombia: (U. S. National Museum) 1 ♂, El Bosque, 1,800 feet elevation, in the Sierra Negra, near Carriapia, Guajira; 1 ♂ (type) Tierra Nueva, 1,200–1,500 feet in the Sierra Negra, Magdalena; 2 ♀ adult, 1 ♀ juvenile, Monte Elias, 4,500 feet in the Sierra Negra, Magdalena. Venezuela: (Phelps Collection, Caracas) 9 heads, sex?, on the Río Negro above Machiques, in the Sierra de Perijá, Zulía.

Pauxi p. unicornis. Bolivia (Academy of Natural Sciences of Philadelphia) 1 ♂ (type), 1 ♀, hills above Bolívar, 2,500 feet elevation near Palmar, Yungas de Cochabamba.

MAMMALOGY.—*The systematic status of certain pocket gophers, with special reference to Thomomys monticola*.¹ E. A. GOLDMAN, Fish and Wildlife Service.

In various papers published during recent years the writer has made efforts to bring together in specific or near-specific groups many of the names proposed for pocket gophers during a pioneer period when systematic relationships were very imperfectly known. Our knowledge of these relationships is still far from complete, but, especially in view of the extraordinary number of names involved, some semblance of systematic order is imperative. In dealing with the names the term "group" may conveniently be used rather loosely to designate either an aggregation of subspecies or an assemblage of closely allied species.

In "Remarks on Pocket Gophers, with Special Reference to *Thomomys talpoides*" (Journ. Mamm. 20: 233. May 14, 1939), I traced the local range of the *Thomomys talpoides* series south in western Washington to the Columbia River. The apparent replacement of populations of the *talpoides* type by the *Thomomys monticola* series in the Pacific coast region south of the Columbia River was also noted, but the subspecies were not formally segregated, and such

confused combinations as *Thomomys douglasii oregonus* Merriam have remained in current literature. At the suggestion of Gerrit S. Miller, Jr. certain names are here revised in order to make them available for inclusion in a new list of North American mammals being prepared by him.

LIST OF SUBSPECIES OF THOMOMYS MONTICOLA,
WITH TYPE LOCALITIES

Thomomys monticola monticola Allen: Mount Tallac, Eldorado County, Calif.

SYNONYMS.—*Thomomys monticola pinitorum* Merriam: Sisson, west base of Mount Shasta, Siskiyou County, Calif.; *Thomomys monticola premaxillaris* Grinnell: 2 miles south of South Yolla Bolly Mountain (7,500 feet), Tehama County, Calif.

Thomomys monticola oregonus Merriam: Ely, near Oregon City, Willamette Valley, Clackamas County, Ore.

Thomomys monticola hesperus Merriam: Tillamook, Tillamook County, Ore.

Thomomys monticola niger Merriam: Seaton, near mouth of Umpqua River, Douglas County, Ore.

Thomomys monticola mazama Merriam: Anna

¹ Received March 11, 1943.